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Stationary Source and CEMS Test Observation and Test Report Review Protocol

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

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Section 1
Introduction

This protocol provides guidance to Texas Natural Resource Conservation Commission (TNRCC) investigators and supervisory staff in preparing for, conducting, evaluating, and reporting Stationary Source and Continuous Emissions Monitoring Systems (CEMS) test observations and test report reviews.

This protocol presents the minimum requirements for conducting test observations and test report reviews. It is aimed at developing consistency among TNRCC investigators in terms of the level of observation conducted, level of test report review conducted, and information reported. It identifies the activities that should ensure a thorough and complete test observation and test report review for the determination of compliance with applicable rules and regulations.

This protocol will be reviewed periodically and changes made as necessary. Any comments, suggestions, or corrections as well as any specific worksheets which have been developed should be submitted to the TNRCC Field Operations office for inclusion in later revisions to this manual.

The principal function of the Stationary Source and CEMS Test Observation and Test Report Review protocol is to assure that the data submitted in the final test report is accurate and is representative of the actual operation of either the source being tested or the CEMS being certified. Once the final test report has been accepted as representative, the compliance status of the source or the acceptability of the CEMS can be determined. To assure that the final test report is accurate and representative, the procedures contained in this protocol should be followed whenever possible. This protocol is intended to be a minimum standard and should not be considered as limiting the amount of detail necessary for an adequate observation and/or review.

Under current environmental regulations, a plant or facility that emits pollutants to the atmosphere must maintain emissions at or below certain levels, and on occasion, install and operate CEMS, as set forth in the applicable Federal, State, or local standards. Conducting a source test is one method of demonstrating compliance with the applicable standards and certification of the CEMS. Several regulations require that source testing be conducted to demonstrate initial and/or continued compliance with the applicable standard and certification of the CEMS. A brief summary of the regulations which require source testing follows:

U.S. Environmental Protection Agency (EPA) Regulations

a) **New Source Performance Standards (NSPS)** - Found in 40 Code of Federal Register (CFR) Part 60. The testing requirements for each facility are contained in the applicable subpart. See attachment 1 for a copy of the table of contents for NSPS as written on July 1, 1993.

b) **National Emission Standards for Hazardous Air Pollutants (NESHAP)** - Found in 40 CFR Part 61. The testing requirements for each facility are contained in the applicable subpart. See attachment 2 for a copy of the table of contents for NESHAP as written on July 1, 1993.

c) **Prevention of Significant Deterioration (PSD)** - Found in 40 CFR Part 52. The testing requirements for each facility will be contained in the applicable PSD permit.

d) **1990 Federal Clean Air Act Amendments** - Based on this document, there have been several regulations which have been or will be proposed and/or promulgated which will require compliance testing and CEMS certification. These regulations include the Acid Rain CEM Program under 40 CFR 75 and the Enhanced Monitoring Program under 40 CFR 64. The testing requirements for these programs and any other programs which will be promulgated will be contained in the applicable 40 CFR Part.

Texas Natural Resource Conservation Commission Regulations

a) **TNRCC Rules** - Found in 31 TAC Chapters 101 through 121. The testing requirements for each facility are contained in the applicable chapter.

b) **TNRCC Regulation VI (Permits)** - Found in 31 TAC Chapter 116. The testing requirements for each facility will be contained in the applicable TACB permit and/or applicable exemption for the facility.

Miscellaneous Testing Requirements

a) **TNRCC Board and/or Court Orders** - The testing requirements for each facility will be contained in the applicable Order.

b) **Hazardous Waste and/or Medical Waste Incinerators** - The testing requirements for each of these facilities will be contained in the applicable permit. Although these facilities are permitted by TNRCC's Waste Division and the Texas Health Department respectively, the TNRCC's Air Division has agreed to observe and review these tests.

c) **Boiler and Industrial Furnace (BIF) Testing** - Boilers and industrial furnaces which burn hazardous wastes as fuel are required to test for emissions using the BIF testing methods. These requirements are in the Resource Conservation and Recovery Act (RCRA) regulations found in 40 CFR Parts 264 and 265.

c) **Informational Testing** - Occasionally a facility will conduct testing for informational purposes only and the TNRCC might observe and review these tests. The testing requirements for these facilities will be contained in the testing plan submitted by the source.

Section 2
Source Test Observation and CEMS Certification

This section outlines the major responsibilities of the TNRCC Observer. These procedures are intended to be a guideline for source test observation and CEMS certification; therefore, the numerous aspects of a source test observation and/or a CEMS certification are not covered in detail in this document.

To ensure that the testing will meet all applicable requirements, most companies hire an independent consulting firm to conduct the source test and/or certification which means that three groups are usually involved in conducting a source test and/or a CEMS certification. These groups and their responsibilities are as follows:

a) **Company** - The owner and/or operator of the facility which is subject to the rule or regulation which requires the stationary source test and/or the CEMS certification. The Company is responsible for demonstrating compliance with the applicable standard and/or certifying the CEMS.

b) **Consultant** - The company which the Company has contracted with to conduct the stationary source test and/or the CEMS certification. The contractor can be either an independent source testing contractor or Company personnel.

c) **Observer** - The TNRCC investigator responsible for observing the source test and/or the CEMS certification. The Observer is responsible for determining the acceptability of the data submitted and assuring that the data is accurate and representative of the actual operation of the source being tested or the CEMS being certified.

The Observer should be knowledgeable and experienced with the various sampling procedures and the various documents relating to source sampling such as the TNRCC Sampling Procedures Manual, NSPS Test Methods and Performance Specifications contained in 40 CFR Part 60, and any other testing methods being utilized in the specific test being conducted. See attachments 3 and 4 for a list of the NSPS Test Methods and Performance Specifications as written on July 1, 1993. Generally, the Observer should be familiar with all aspects of the testing situation, conduct the pretest meeting, observe the test, and review the report. The Observer is not involved directly in the testing process; in fact, he must specifically avoid any action that could interfere with the performance of the Company and/or Consultant. Basic requirements for a person conducting test observations involve both technical skill and considerable tact in dealing with the Company and/or the Consultant.

2.10 PREPARATION FOR TEST

2.11 Notification

Sufficient advance notice of testing must be provided to the TNRCC for preparation and scheduling. If sufficient advance notice is not provided, an observer may not be able to attend the test and problems that could preclude the acceptance of the test report may not be avoided. The presence of an observer may also be required by permit or other sampling requirements.

A guideline which can be used in the absence of any mandated time submittal dealine is written notification of the proposed test should be submitted to the appropriate Regional TNRCC Office at least 15 calendar days prior to the proposed pretest meeting date and/or 45 days prior to the proposed testing date. Telephone notification will serve as initial notification; however, written notification must be received prior to officially scheduling the pretest meeting and/or testing date. Faxed notifications will serve as written notification. The following information should be submitted in the written notification:

a) Tentative Pretest Meeting Date
b) Tentative Testing Date
c) Testing Company (Consultant)
d) Source Being Tested
e) Regulation Requiring Test

Requests for proper notification delays must be submitted to the appropriate TNRCC Regional Office for approval. If there is no mandated time submittal deadline, enforcement action should not be taken if the above guideline is not met.

2.12 File Review

The Observer should be familiar with all aspects of the test prior to the observation. Preparation for the test observation should include a review of the operation of the process unit being tested, operation of the control equipment associated with the unit, CEMS associated with the unit, the regulation requiring the test and/or certification, the proposed sampling methods, and any previous tests and/or certifications conducted at the subject unit. The Observer should also be aware of any necessary special treatment of the samples, such as inclusion and/or exclusion of condensables.

The Observer should review any sampling protocol submitted by the Company and/or Consultant. A description of what should be included in a sampling protocol is discussed in Subsection 2.3. The Observer should make sure that any proposed deviations to the standard test methods are submitted to the Sampling & Analysis Section (SAS) of the Monitoring Operations Division. If the Observer has any comments about the proposed

deviation, the comments should be conveyed to SAS. All deviations of standard test methods and any other problems noted in the sampling protocol must be resolved prior to the test date.

SAS can answer technical questions on source sampling, continuous emission monitoring, and laboratory analysis. SAS can also assist in interpretations of various state and federal regulations and permit provisions and is available for source test observation, CEMS certification, and report review in certain instances. The current procedure recommended for TNRCC Regional Offices to follow when making requests for SAS to assist in field work is:

a) **Travel to Regional Office** - Once it has been determined by the Observer that a situation has arisen that requires additional manpower and/or some type of field assistance which will require members of SAS to leave the Austin office, the Regional Manager (or designated representative) should contact the Director of SAS and make the request. This request can be verbal or written.

b) **No Travel to Regional Office** - Technical assistance requests that will not require members of SAS to leave the Austin office do not usually have to come through the Regional Manager or the Director of SAS. These requests should be made directly to the Team Leader of SAS verbally or in writing.

2.13 Sampling Protocol

Sampling protocols should be encouraged since problems can be averted ahead of the sampling date. If any deviations in the standard testing methods are proposed, the protocol should be submitted prior to the pretest meeting in order to allow the proposal to be evaluated by SAS if needed. If there are no deviations to the standard testing methods the protocol can be submitted at the pretest meeting. In situations where non-standard methods will be used, the Company must obtain approval from SAS prior to the testing date. A sampling protocol should contain at a minimum the following information:

a) Company Name
b) Company Contact and Phone Number
c) Source Being Sampled
d) Emission Point Number (EPN)
e) Testing Company (Consultant)
f) Proposed Sampling Dates
g) Regulation Requiring Sampling
h) Pollutants Being Sampled
i) Proposed Sampling Methods
j) Proposed Deviations from Standard Sampling Methods
k) Date Source Started Operation
l) Design, Normal, and Maximum Operating Level of Source, if applicable
m) Operating Parameters to be Monitored During Sampling

n) CEMS being certified
o) Date CEMS installed
p) Proposed Performance Specifications
q) Drawing of Stack with Location of Ports and CEMS

2.14 Pretest Meeting

Pretest meetings are held to discuss the sampling requirements so the Company, Consultant, and Observer are made aware of their respective responsibilities and to discuss any unusual circumstances that may exist. The pretest meeting is the best place to discuss any non-standard situations, bias possibilities, special procedures, and to ensure that the Company knows about the responsibility of demonstrating compliance and/or certifying the CEMS. If any deviations from the standard methods have been proposed, the Company should be informed that proper approval from SAS should be received prior to sampling.

The location of the pretest meeting should be left to the discretion of the regional office. It is recommended that the Company, Consultant, and Observer be present at the pretest meeting. The following material should be available at the pretest meeting:

a) Pretest Meeting Summary Checklist
b) Sampling Protocol if Required
c) Copy of Document Requiring Sampling (TACB Permit, PSD Permit, NSPS, Order etc.)

The pretest meeting summary checklist shall be furnished by the TNRCC Observer. See attachment 5. The remaining items shall be furnished by the Company and/or Consultant.

Items which should be discussed during the pretest meeting include sampling equipment, sampling methods, analysis procedures, facility operating conditions, control equipment operating conditions, process parameters to be recorded, and fuel and/or feed samples. The safety requirements which are required by the Company should also be discussed at the pretest meeting. The sampling protocol submitted by the company should be discussed and agreement reached during the pretest meeting if possible. The Company should also be aware that the operating conditions of the unit being tested to show compliance with emission limits will normally be limited to within 10% of that maintained during sampling; therefore, the pretest meeting is the most logical opportunity to make this known. See attachment 6.

The Observer should supply the Company and/or Consultant with a summary of the reporting requirements found in Chapter 14 of the TNRCC Sampling Manual (attachment 7) and discuss the number of reports which should be submitted to the TNRCC (Regional Office, SAS, Local Program, Permit Engineer, etc.). The Observer should also encourage the Company and/or Consultant to read Chapter 14 of the TNRCC Sampling Procedures Manual. At the conclusion of the pretest meeting, the Company and/or Consultant should

be encouraged to submit a summary of the meeting if any deviations in the testing protocol were discussed. If the Company and/or Consultant submits a summary, the Observer must review the summary and contact the Company if the Observer does not agree with the summary. This will assure that all parties are in agreement with any decisions made at the pretest meeting.

After the pretest meeting the Observer must prepare a written report summarizing the meeting. A completed pretest meeting summary checklist, a written summary attached to a completed sampling protocol, or a written report which contains all of the required information will act as the final report. This report must be attached to a completed PSDB form and submitted within 3 weeks after the pretest meeting.

2.20 Test Observation

The main role of the Observer is to leave the test site with an accurate picture of how the unit and/or CEMS were operating and how the Consultant conducted the sampling during the required test. The main observations which the Observer should note are the operating parameters of the unit and/or CEMS and the sampling methods utilized during the test. Information concerning how the unit and associated control equipment and/or the CEMS should be operating and the sampling methods should have been covered in the sampling protocol and the pretest meeting. If test procedures do not follow the established guidelines, the Observer should deal solely with the designated representative or have a clear understanding when it becomes necessary to communicate with the test technicians and/or plant operators. The Observer wants a valid and representative sample to be collected so an accurate compliance and/or CEMS certification determination can be made.

2.21 Plant Operating Conditions

The operating conditions of the unit being tested should be representative of normal operation and/or any other condition which the Company wants to demonstrate compliance with the applicable standard. The Company should be aware that the operating conditions of the unit being tested will normally be limited to within 10% of that maintained during sampling. This 10% policy does not mean that a company can artificially limit operating conditions during the test to 90% of what the unit normally operates at in order to demonstrate compliance and then increase operating conditions to 100% after the completion of the test. The Company must try to operate the unit being tested at its maximum sustained operating level. This point should have been discussed at the pretest meeting.

Normal operation for a facility that has one or more abatement devices, means that the process equipment and the abatement devices (scrubbers, ESP, baghouse, etc.) should be operated in a mode that would exist if no testing were being conducted. This means that flow rates through the entire system should not be lowered during testing so that a baghouse or ESP can have better collection efficiency, an ESP's power should not be

increased so that the ESP collects particulate matter more efficiently, a scrubber should not be run with all three towers in service if only two are normally used, a tower should not operate four spray levels during the test when normal operation dictates that three spray levels are used, and redundant or backup abatement equipment should not be used during a test to increase control efficiency. The unit being tested should also be operated at maximum production while producing worst case product (printing with maximum ink coverage, making a grade of asphaltic cement containing the greatest amount of asphalt oil, burning No. 6 fuel oil instead of No. 2 fuel oil, etc.).

Another area which the Observer should note is the actual operation of the unit. If the unit is normally operated by two operators, there should not be additional personnel (process engineers, vendor engineers, etc.) making adjustments to the process during the test that under normal operating conditions would not exist. If a computer normally sets the limits on the operation of the facility, the computer equipment should not be over run and operated manually during the test.

The Observer should have the sampling protocol or other document which lists the process equipment and control equipment parameters which should be monitored and recorded during the test. These should have been agreed to prior to the test date. During the test, the Observer should verify that the conditions which were agreed to are being monitored and recorded accurately. The Observer should spot check the records and record some of the required data himself to compare with data which will be submitted with the test report. The Observer should also determine if the control equipment associated with the unit being tested is working (as agreed upon at the pretest meeting) properly and any required records are being kept accurately.

During the test, the Observer should pay close attention to the process unit being tested. The Observer should make sure that the stack that the Consultant is testing is the actual stack associated with the unit being tested and assure to the best of his ability that the whole process stream is being routed through the stack being sampled. The Observer should also record any unusual circumstances that occur during the sampling period which might affect the final results of the test.

2.22 Sampling

Normally, the Observer is the person who will review the final test report and determine if the report is acceptable or unacceptable. Occasionally, another person will review the final test report; therefore, the Observer's notes during the observation phase of the testing should always be as accurate and complete as possible. The Observer should be knowledgeable in the sampling procedures being utilized by the Company and/or Consultant during the specific test being observed. Sampling protocols and correct sampling procedures (40 CFR 60 Test Methods, TNRCC Sampling Procedures Manual, Laboratory Analytical Methods Manual, etc.) must be utilized during the test. If the Company has received an approval for a non-standard sampling method or deviation from a standard sampling method, the method must be utilized as stated.

The Observer must observe at a minimum one full run of the required test. This encompasses set-up of sampling train, sampling, and recovery of the sample. If the run is voided for some reason, the Observer should observe another full run until the run is not voided. The "one full run" requirement should not be construed to limit the amount of the test which the Observer observes. There may be tests which require more observation than just one full run. This should be left to the discretion of the Observer and/or Air Program Manager. A summary of the details which the Observer should view during the test observation follows:

a) **Prior to Sampling** - Prior to the actual start of the run being observed, the Observer should check sampling equipment for damage which might bias the test results. The Observer should inspect the sample recovery area and observe the assembly of the sampling train if possible (are the impingers in order and connected, is there ice in the sample case, is the oven hot enough, etc.). If time allows, the Observer should witness the initial readings and leak check to assure accuracy of data.

b) **During Sampling** - The most critical part of a sample run is the start and finish of each run because most of the errors occur during this period. The Observer should closely watch the start and finish of the sample run. Information which should be collected during this stage of the test includes general sampling site, test run observed, raw sample data, raw production data, operating data, operating parameters, methods utilized by the Contractor, any noted deviations to sampling methods and/or sampling protocol, instrument calibration records, calibration gas certifications, and names of individuals conducting the test. At the end of the run, the Observer should witness the final instrument readings and the final leak check to determine if the required amount of sample was collected during the test.

   During the test run, the Observer should never, even if requested, turn knobs or dials, touch or adjust test equipment, and should avoid distracting tester during critical times of the test.

c) **After Sampling** - After the test run is completed, the Observer should witness the sample recovery if possible. Proper recovery of the sample is crucial to the compliance test. As a rule of thumb, the weight of sample recovered will be multiplied by a factor of over 100,000 to get the total stack emission rate, so any errors in sample recovery would be critical. To reduce the possibility of invalidating the test results, the Consultant must carefully remove all of the samples from the sampling train and place them in sealed, nonreactive, numbered containers. It is recommended that the samples then be delivered to the laboratory for analysis on the same day. If this is impractical, all samples should be placed in a carrying case (preferably locked), in which they are protected from breakage, contamination, loss, or deterioration. The Consultant must mark the samples properly to provide positive identification throughout the test and analysis

procedures. The Observer should witness the clean-up of the sample, noting filter and probe wash, impinger weighing, etc.

At completion of the test run, the Observer should get a copy of the plant operational data and Consultant's field data sheets for the run if possible.

If at any time during the test run the Observer feels that an error has been made by the Company and/or Consultant which might compromise or invalidate the test run, the Observer should advise the Company and/or Consultant. The noted situation should be discussed and a decision should be made as to whether the test run should be voided. Remember, the Company is the party which must demonstrate compliance with the applicable standard and the Observer is the party responsible for determining acceptability of the accuracy and representativeness of the actual operation of the source being tested. The Observer does not have ultimate control over the sampling and should not make final decisions about the testing and/or certification in the field. The final decision about the acceptability of the test will be made after the review of the final test report.

Unless otherwise specified, each compliance test shall consist of three separate runs using the applicable test method. Each run shall be conducted for the time and under the conditions specified in the applicable standard. For the purpose of determining compliance with an applicable standard, the arithmetic means of results of the three runs shall apply. In the event that a sample is accidentally lost or conditions occur in which one of the three runs must be discontinued because of forced shutdown, failure of an irreplaceable portion of the sample train, extreme meteorological conditions, or other circumstances, beyond the Company's control, compliance may be determined using the arithmetic mean of the results of the two other runs.

After the test observation, the Observer must prepare a written report summarizing the observation. All deviations to the sampling procedures and/or sampling protocol should be noted and any special occurrences which might bias the test results should be documented. A completed test observation summary checklist (see attachment 8), a written summary attached to the data collected during the observation, or a written report which contains all of the required information will act as the final report. This report must be attached to a completed PSDB form and submitted within 3 weeks after the test observation.

2.23 Safety

Before entering the plant to conduct a test observation, the Observer should know what safety procedures and equipment the Company requires or recommends. This information should have been discussed at the pretest meeting. If the Company requires special training prior to entry, the Observer may need to schedule a day
prior to the test date to obtain the training from the Company.

At the unit being tested, the Company should provide safe sampling platforms and safe access to the sampling platforms. The Observer should be familiar with the Company's

plant safety requirements and hazards and should not compromise them at any time. If the Observer determines that the sampling platform is not safe or there is no safe access to the platform, the Observer should not attempt to observe the test from the platform. If the Observer determines that the conditions are safe, the following guidelines should be used while on the platform:

a) Use gloves when climbing any ladder. Climb the ladder hand over hand on rungs. DO NOT hold the sides of the ladder.

b) DO NOT carry anything in your hands while climbing. Use over shoulder/side pouches or have material lifted in a bucket.

c) Rest every 30 feet while climbing a ladder and only one person on a section of the ladder at a time.

d) DO NOT lean over open ladder well. The ladder guard should be in place. Also look for any opening in the grating and request that the Company close any openings.

e) When walking around the platform, watch for steps on platforms/walkways/ground. Watch for any wet surfaces.

f) DO NOT lean against the guardrail.

g) DO NOT stay in areas of high heat, 115 °F, and high humidity for long periods of time.

h) Keep all loose clothing within jacket or coverall.

i) DO NOT touch hot surfaces without wearing the proper gloves, leather or Nomex.

j) DO NOT breathe gas effluent from sampling ports.

k) Do not step on any sample lines, electrical lines, ropes, or anything else that might be connected to the sampling apparatus and/or operation.

l) Keep in mind that stack sampling is dangerous work, so keep alert to what is going on, especially on the platform. Keep in mind also that the unit being tested is, or may be, operating near its safety limits.

The Observer should be aware of these safety guidelines. For clarification or additional information, the Observer should contact the Additional Duty Safety Officer in the Region or the Safety Officer in the Central Office.

Section 3
Source Test and CEMS Certification Report Review Procedures

Source test reports and CEMS certification reports are submitted to the TNRCC to demonstrate compliance with various requirements and are reviewed by TNRCC to determine acceptability. The primary purpose of the test report review is to evaluate the available data and to determine if the data is acceptable to determine the compliance status of the source tested or the acceptability of the CEMS being certified. Any deficiencies in the report should be noted and properly explained. If the reviewer suspects a bias in the compliance testing results, this bias should be noted. A bias that can only produce emission values higher than the true emissions would not invalidate the results if the unit is determined to be in compliance. Therefore, any bias that may occur should be listed along with the suspected direction of the bias.

3.10 Contents of Reports

Chapter 14 of the TNRCC Sampling Procedures Manual (SPM) lists recommended contents of sampling reports. These guidelines are intended to inform the preparers of the report about the necessary information needed to review the report. The list should not be considered absolute; therefore, a report should not be rejected simply because item(s) are missing if an adequate review is still possible. Likewise, information additional to that mentioned in Chapter 14 may be necessary for an adequate review. A summary of the reporting requirements should have been supplied to the Company and/or Contractor during the pretest meeting. See attachment 7.

3.20 Report Review Procedures

Reports should be reviewed to the extent necessary for the reviewer to be confident of the adequacy of the sampling results for the particular purposes of the sampling requirements. Since sampling requirements will vary from source to source, the reviewer should be familiar with the sampling requirements to determine the adequacy of the sampling results. The reviewer should check at least one of the three sample runs to ensure that correct calculations were utilized.

Due to the involved and varied nature of source sampling, a detailed description of report review procedures will not be attempted here. The reviewer should be familiar with the reporting requirements contained in the Federal Regulations, the TNRCC Sampling Procedures Manual, and the EPA Quality Assurance Handbook for Air Pollution Measurement Systems. These sources contain pertinent information regarding source test reports.

The reviewer can use a Source Test Contents Review Checklist to determine if the required information has been submitted by the Company and/or Contractor. See attachment 9.

The checklist is a reminder of items that may need to be checked in a sampling report. The list is also only an attempt to cover the complex variety of items subject to review. Report reviewers, therefore, are encouraged to expand the list to fit their own particular needs.

3.30 Report Review Forms

The Stack Test Report Review form QA-108 is used to report the reviewer's evaluation of source test reports. See attachment 10. The "bottom line" of review form QA-108 is the shaded portion which denotes the acceptability of the report and whether allowable emissions have been exceeded.

The acceptability portion of review form QA-108 refers to the sampling procedures used and whether the report is a correct representation of the emissions at the time of sampling. The "allowable exceeded" portion of review form QA-108 indicates whether the respective emission rates of the various pollutants exceeded their respective allowable emission rates. Additional comments and information concerning the acceptability of the report and the compliance status of the unit tested should be placed in the discussion section. Any deviations from the standard methods which were detected during the report review should also be discussed in this section.

The CEMS Certification Report Review form QA-109 is used to report the reviewer's evaluation of CEMS certification reports and determination of CEMS acceptability. See attachment 11. CEMS acceptability refers to the sampling procedures used and whether the report is a correct representation of the emissions at the time of sampling, a comparison of the CEMS responses to those obtained by sampling and whether the CEMS was operating properly at the time of the sampling, and a determination of the instrument drift. All three criteria must be satisfactorily met to certify a CEMS for use.

After the reviewer has completed the test report and/or CEMS certification review, a completed review form QA-108 and/or review form QA-109 attached to a PSDB form must be submitted. If the reviewer has additional comments, a written report can also be submitted with the completed review form. The completed review form and/or written report must be submitted within 60 days after the completed test report and/or CEMS certification was received in the appropriate TNRCC office.

Attachment 1
40 CFR Part 60 - Standards of Performance for New Stationary Sources

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60.5 Determination of construction or modification.
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60.7 Notification and recordkeeping.
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60.9 Availability of information.
60.10 State authority.
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60.23 Adoption and submittal of State plans; public hearings.
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60.34a Emission guidelines for municipal waste combustor organics.
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60.36a Emission guidelines for municipal waste combustor operating practices, training, and municipal waste combustor operator certification.
60.37a Reserved]
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61.182 Standard for new and existing sources.
61.183 Emission monitoring.
61.184 Ambient air monitoring for inorganic arsenic.
61.185 Recordkeeping requirements.
61.186 Reporting requirements.

Subpart Q - National Emission Standards for Radon Emissions From Department of Energy Facilities

61.190 Designation of facilities.
61.191 Definitions.
61.192 Standard.
61.193 Exemption from the reporting and testing requirements of 40 CFR 61.10.

Subpart R - National Emission Standards for Radon Emissions From Phosphogypsum Stacks

61.200 Designation of facilities.
61.201 Definitions.
61.202 Standard.
61.203 Radon monitoring and compliance procedures.
61.204 Recordkeeping requirements.
61.205 Exemption from the reporting and testing requirements of 40 CFR 61.10.

Subpart S - [Reserved]

Subpart T - National Emission Standards for Radon Emissions From the Disposal of Uranium Mill Tailings

61.220 Designation of facilities.
61.221 Definitions.
61.222 Standard.
61.223 Compliance procedures.
61.224 Recordkeeping requirements.
61.225 Exemption from the reporting and testing requirements of 40 CFR 61.10.

Subpart U - [Reserved]

Subpart V - National Emission Standard for Equipment Leaks
(Fugitive Emission Sources)

61.240 Applicability and designation of sources.
61.241 Definitions.
61.242-1 Standards: General.
61.242-2 Standards: Pumps.
61.242-3 Standards: Compressors.
61.242-4 Standards: Pressure relief devices in gas/vapor service.
61.242-5 Standards: Sampling connecting systems.
61.242-6 Standards: Open-ended valves or lines.
61.242-7 Standards: Valves.
61.242-8 Standards: Pressure relief devices in liquid service and flanges and other connectors.
61.242-9 Standards: Product accumulator vessels.
61.242-10 Standards: Delay of repair.
61.242-11 Standards: Closed-vent systems and control devices.
61.243-1 Alternative standards for valves in VHAP service–allowable percentage of valves leaking.
61.243-2 Alternative standards for valves in VHAP service–skip period leak detection and repair.
61.244 Alternative means of emission limitation.
61.245 Test methods and procedures.
61.246 Recordkeeping requirements.
61.247 Reporting requirements.

Subpart W - National Emission Standards for Radon Emissions From Operating Mill Tailings

61.250 Designation of facilities.
61.251 Definitions.
61.252 Standard.
61.253 Determining compliance.
61.254 Annual reporting requirements.
61.255 Recordkeeping requirements.
61.256 Exemption from the reporting and testing requirements of 40 CFR 61.10.

Subpart Y - National Emission Standard for Benzene Emissions from Benzene Storage Vessels

61.270 Applicability and designation of sources.
61.271 Emission standard.
61.272 Compliance provisions.
61.273 Alternative means of emission limitation.
61.274 Initial report.
61.275 Periodic report.
61.276 Recordkeeping.
61.277 Delegation of authority.

Subpart BB - National Emission Standard for Benzene Emissions from Benzene Transfer Operations

61.300 Applicability.
61.301 Definitions.
61.302 Standards.
61.303 Monitoring requirements.
61.304 Test methods and procedures.
61.305 Reporting and recordkeeping.
61.306 Delegation of authority.

Subpart FF - National Emission Standard for Benzene Waste Operations

61.340 Applicability
61.341 Definitions.
61.342 Standards: General.
61.343 Standards: Tanks.
61.344 Standards: Surface impoundments.
61.345 Standards: Containers.
61.346 Standards: Individual drain systems.
61.347 Standards: Oil-water separators.
61.348 Standards: Treatment processes.
61.349 Standards: Closed-vent systems and control devices.
61.350 Standards: Delay of repair.
61.351 Alternative standards for tanks.
61.352 Alternative standards for oil-water separators.
61.353 Alternative means of emission limitation.
61.354 Monitoring of operations.
61.355 Test methods, procedures, and compliance provisions.
61.356 Recordkeeping requirements.
61.357 Reporting requirements.
61.358 Delegation of authority.
61.359 Stay of effective date.

Appendix A - National Emission Standards for Hazardous Air Pollutants

Appendix B - Test Methods

Method 101 Determination of Particulate and Gaseous Mercury Emissions From Chlor-Alkali Plants–Air Streams

Method 101A Determination of Particulate and Gaseous Mercury Emissions From Sewage Sludge Incinerators

Method 102	Determination of Particulate and Gaseous Mercury Emissions From Chlor-Alkali Plants–Hydrogen Streams
Method 103	Beryllium Screening Method
Method 104	Determination of Beryllium Emissions From Stationary Sources
Method 105	Determination of Mercury in Wastewater Treatment Plant Sewage Sludge
Method 106	Determination of Vinyl Chloride From Stationary Sources
Method 107	Determination of Vinyl Chloride Content of Inprocess Wastewater Samples, and Vinyl Chloride Content of Polyvinyl Chloride Resin, Slurry, Wet Cake, and Latex Samples
Method 107A	Determination of Vinyl Chloride Content of Solvents, Resin- Solvent Solution, Polyvinyl Chloride Resin, Resin Slurry, Wet Resin, and Latex Samples
Method 108	Determination of Particulate and Gaseous Arsenic Emissions
Method 108A	Determination of Arsenic Content in Ore SampleS From Nonferrous Smelters
Method 108B	Determination of Arsenic Content in Ore Samples from Nonferrous Smelters
Method 108C	Determination of Arsenic Content in Ore Samples from Nonferrous Smelters
Method 111	Determination of Polonium-210 Emissions From Stationary Sources
Method 114	Test Methods for Measuring Radionuclide Emissions from Stationary Sources
Method 115	Monitoring for Radon-222 Emissions

Appendix C - Quality Assurance Procedures

Appendix D - Methods for Estimating Radionuclide Emissions

Appendix E - Compliance Procedures Methods for Determining Compliance With Subpart I

Attachment 3
NSPS–40 CFR 60
Appendix A–Test Methods

Method 1 Sample and velocity traverses for stationary sources

Method 1A Sample and velocity traverses for stationary sources with small stacks or ducts

Method 2 Determination of stack gas velocity and volumetric flow rate (Type S pitot tube)

Method 2A Direct measurement of gas volume through pipes and small ducts

Method 2B Determination of exhaust gas volume flow rate from gasoline vapor incinerators

Method 2C Determination of stack gas velocity and volumetric flow rate in small stacks or ducts (standard pitot tube)

Method 2D Measurement of gas volumetric flow rates in small pipes and ducts

Method 3 Gas analysis for carbon dioxide, oxygen, excess air, and dry molecular weight

Method 3A Determination of Oxygen and Carbon Dioxide Concentrations in Emissions From Stationary Sources (Instrumental Analyzer Procedure)

Method 4 Determination of moisture content in stack gases

Method 5 Determination of particulate emissions from stationary sources

Method 5A Determination of particulate emissions from the asphalt processing and asphalt roofing industry

Method 5B Determination of nonsulfuric acid particulate matter from stationary sources

Method 5C [Reserved]

Method 5D Determination of particulate emissions from positive pressure fabric filters

Method 5E Determination of particulate emissions from the wool fiberglass insulation manufacturing industry

Method 5F Determination of nonsulfate particulate matter from stationary sources

Method 5G Determination of particulate emissions from wood heaters from a dilution tunnel sampling location

Method 5H Determination of particulate emissions from wood heaters from a stack location

Method 6 Determination of sulfur dioxide emissions from stationary sources

Method 6A Determination of sulfur dioxide, moisture, and carbon dioxide emissions from fossil fuel combustion sources

Method 6B Determination of sulfur dioxide and carbon dioxide daily average emissions from fossil fuel combustion sources

Method 6C Determination of Sulfur Dioxide Emissions From Stationary Sources (Instrumental Analyzer Procedure)

Method 7 Determination of nitrogen oxide emissions from stationary sources

Method 7A Determination of nitrogen oxide emissions from stationary sources –Ion chromatographic method

Method 7B Determination of nitrogen oxide emissions from stationary sources (Ultraviolet spectrophotometry)

Method 7C Determination of nitrogen oxide emissions from stationary sources – Alkaline-permanganate/colorimetric method

Method 7D Determination of nitrogen oxide emissions from stationary sources – Alkaline-permanganate/ion chromatographic method

Method 7E Determination of Nitrogen Oxides Emissions From Stationary Sources (Instrumental Analyzer Procedure)

Method 8 Determination of sulfuric acid mist and sulfur dioxide emissions from stationary sources

Method 9 Visual determination of the opacity of emissions from stationary sources

Alternate method 1 – Determination of the opacity of emissions from stationary sources remotely by lidar

Method 10 Determination of carbon monoxide emissions from stationary sources

Method 1OA Determination of carbon monoxide emissions in certifying continuous emission monitoring systems at petroleum refineries

Method 1OB Determination of carbon monoxide emissions from stationary sources

Method 11 Determination of hydrogen sulfide content of fuel gas streams in petroleum refineries

Method 12 Determination of inorganic lead emissions from stationary sources

Method 13A Determination of total fluoride emissions from stationary sources – SPADNS zirconium lake method

Method 13B Determination of total fluoride emissions from stationary sources – Specific ion electrode method

Method 14 Determination of fluoride emissions from potroom roof monitors for primary aluminum plants

Method 15 Determination of hydrogen sulfide, carbonyl sulfide, and carbon disulfide emissions from stationary sources

Method 15A Determination of total reduced sulfur emissions from sulfur recovery plants in petroleum refineries

Method 16 Semicontinuous determination of sulfur emissions from stationary sources

Method 16A Determination of total reduced sulfur emissions from stationary sources (impinger technique)

Method 16B Determination of total reduced sulfur emissions from stationary sources

Method 17 Determination of particulate emissions from stationary sources (instack filtration method)

Method 18 Measurement of gaseous organic compound emissions by gas chromatography

Method 19 Determination of sulfur dioxide removal efficiency and particulate, sulfur dioxide and nitrogen oxides emission rates

Method 20 Determination of nitrogen oxides, sulfur dioxide, and diluent emissions from stationary gas turbines

Method 21 Determination of volatile organic compound leaks

Method 22 Visual determination of fugitive emissions from material sources and smoke emissions from flares

Method 24 Determination of volatile matter content, water content, density, volume solids, and weight solids of surface coatings

Method 24A Determination of volatile matter content and density of printing inks and related coatings

Method 25 Determination of total gaseous nonmethane organic emissions as carbon

Method 25A Determination of total gaseous organic concentration using a flame ionization analyzer

Method 25B Determination of total gaseous organic concentration using a nondispersive infrared analyzer

Method 27 Determination of vapor tightness of gasoline delivery tank using pressure-vacuum test

Method 28 Certification and auditing of wood heaters

Method 28A Measurement of air to fuel ratio and minimum achievable burn rates for wood-fired appliances

Method 29 Multiple Metals

The test methods in this appendix are referred to in Section (§) 60.8 (Performance Tests) and § 60.11 (Compliance With Standards and Maintenance Requirements) of 40 CFR Part 60, Subpart A (General Provisions). Specific uses of these test methods are described in the standards of performance contained in the subparts, beginning with Subpart D.

Within each standard of performance, a section titled "Test Methods and Procedures" is provided to: (1) Identify the test methods to be used as a reference methods to the facility subject to the respective standard and (2) identify any special instructions or conditions to be followed when applying a method to the respective facility. Such instructions (for example, establish sampling rates, volumes, or temperatures) are to be used either in addition to, or as a substitute for procedures in a test method. Similarly, for sources subject to emission monitoring requirements, specific instructions pertaining to any use of a test method as a reference method are provided in the subpart or in Appendix B.

Inclusion of methods in this appendix is not intended as an endorsement or denial of their applicability to sources that are not subject to standards of performance. The methods are potentially applicable to other sources; however, applicability should be confirmed by careful and appropriate evaluation of the conditions prevalent at such sources.

The approach followed in the formulation of the test methods involves specifications for equipment, procedures, and performance. In concept, a performance specification approach would be preferable in all methods because this allows the greatest flexibility to the user. In practice, however, this approach is impractical in most cases because performance specifications cannot be established. Most of the methods described herein, therefore,

involve specific equipment specifications and procedures, and only a few methods in this appendix rely on performance criteria.

Minor changes in the test methods should not necessarily affect the validity of the results and it is recognized that alternative and equivalent methods exist. Section 60.8 provides authority for the Administrator to specify or approve (1) equivalent methods, (2) alternative methods, and (3) minor changes in the methodology of the test methods. It should be clearly understood that unless otherwise identified all such methods and changes must have prior approval of the Administrator. An owner employing such methods or deviations from the test methods without obtaining prior approval does so at the risk of subsequent disapproval and retesting with approved methods.

Within the test methods, certain specific equipment or procedures are recognized as being acceptable or potentially acceptable and are specifically identified in the methods. The items identified as acceptable options may be used without approval but must be identified in the test report. The potentially approvable options are cited as "subject to the approval of the Administrator" or as "or equivalent." Such potentially approvable techniques or alternatives may be used at the discretion of the owner without prior approval. However, detailed descriptions for applying these potentially approvable techniques or alternatives are not provided in the test methods. Also, the potentially approvable options are not necessarily acceptable in all applications. Therefore, an owner electing to use such potentially approvable techniques or alternatives is responsible for: (1) assuring that the techniques or alternatives are in fact applicable and are properly executed; (2) including a written description of the alternative method in the test report (the written method must be clear and must be capable of being performed without additional instruction, and the degree of detail should be similar to the detail contained in the test methods); and (3) providing any rationale or supporting data necessary to show the validity of the alternative in the particular application. Failure to meet these requirements can result in the Administrator's disapproval of the alternative.

Attachment 4
NSPS–40 CFR 60
Appendix B–Performance Specifications

Performance Specification 1	Specifications and test procedures for opacity continuous emission monitoring systems in stationary sources
Performance Specification 2	Specifications and test procedures for SO(2) and NO(x) continuous emission monitoring systems in stationary sources
Performance Specification 3	Specifications and test procedures for O(2) and CO(2) continuous emission monitoring systems in stationary sources
Performance Specification 4	Specifications and test procedures for carbon monoxide continuous emission monitoring systems in stationary sources
Performance Specification 4A	Specifications and test procedures for carbon monoxide continuous emission monitoring systems in stationary sources
Performance Specification 5	Specifications and test procedures for TRS continuous emission monitoring systems in stationary sources
Performance Specification 6	Specifications and test procedures for continuous emission rate monitoring systems in stationary sources
Performance Specification 7	Specifications and test procedures for hydrogen sulfide continuous emission monitoring systems in stationary sources

Attachment 5
TNRCC Pretest Meeting Summary Checklist

Attachment 6
Source Evaluation Procedures

The following constitutes a maximum performance test for NSPS purposes; and if a facility is tested at a certain capacity how much above that capacity the unit can run without being required to retest.

The current Source Evaluation procedures are as follows:

1. When a facility is being tested for NSPS the production rate can not vary by more than 20% or the test must either be repeated or stopped until which time that the unit's production rate falls back within this 20% range.

2. The actual average production rate during the NSPS performance test will be the certified production rate.

3. If the facility runs more than 10% above this certified rate, it will be subject to retesting to demonstrate compliance with NSPS regulations at the higher production rate.

4. A standard special provision (15.1) is normally added to the permit for item 3 above. This special provision cannot be added if the production rate during sampling is within 10% of the maximum design production rate represented in the construction permit.

An example of these procedures are as follows:

> A power boiler is tested and the production rate varies from 905 to 1095 megawatts during the test (an acceptable 20% or less range). The average for the test is 1000 megawatts which becomes the certified production rate. If, at any time, the production rate exceeds 1100 megawatts, which is more than 10% above the certified production rate, the facility is subject to retesting.

Source Evaluation also applies this policy to non-NSPS sources when requested to perform sampling for special provisions of Permits.

Attachment 7
Contents of Stack Test Reports

Attachment 12
Additional Forms